

REMARKS

Reconsideration of the present application is respectfully requested.

Claims 1, 3-6, 8-15 and 18-19 previously presented for examination remain in the application. Claims 1, 4, 9, 14 and 18 have been amended. No claims have been canceled or added.

Claims 1, 3-5, 8, 9, 11-15, 18 and 19 stand rejected under 35 U.S.C. § 102(b) as being considered to be anticipated by U.S. Patent No. 5,668,563 to Ogino et al. ("Ogino").

Claim 1 includes the limitations

an intentional radiator including an antenna and a ground plane directly connected to the antenna, the ground plane to be electrically connected to shielding by a direct solder connection between a portion of a surface of the ground plane and the shielding, the shielding including an opening for the antenna, the intentional radiator to be positioned such that the antenna radiates through the opening and the ground plane at least partially physically blocks emissions through the opening.

(Claim 1)(emphasis added).

Applicant respectfully submits that Ogino does not teach or suggest at least a ground plane that is directly connected to an antenna and electrically connected to shielding by a direct solder connection between a surface of the ground plane and shielding.

Ogino discloses an integral type flat antenna provided with a converter function. In accordance with Ogino, a grounding plane for the antenna element is electrically connected to an upper case of a housing in order to ground the antenna element. (Ogino, col. 6, lines 64-66.) Ogino also describes at column 7, lines 30-35, that part of the circuit pattern 43 that is provided on the underside

surface of the multilayered substrate of Ogino simultaneously functions as a grounding plane of the frequency conversion circuit. Ogino goes on to say that part of the circuit pattern 43 is soldered to the upper case in order to establish a ground with the housing and to fix the multilayered substrate to the inside of the upper case.

In contrast, claim 1 sets forth an apparatus in which a ground plane that is directly connected to an antenna has a surface that is directly soldered to shielding.

It is suggested in the Advisory Action at paragraph 3, page 2, that the ground plane 43 can be considered to teach the claimed ground plane. Applicant respectfully submits the element 43 cannot properly be considered to teach the ground plane of claim 1 as set forth above. As described in Ogino, the element 43 is a circuit pattern that may simultaneously function as a grounding plane of the frequency conversion circuit.

While the element 43 is connected to the antenna 42 via plated through holes, there is no portion of a surface of the element 43 that is soldered to shielding as set forth in the claims. It is argued in the Advisory action that the shielding solder connection of Ogino teaches the claimed solder connection between shielding and a portion of a surface of a ground plane that is directly connected to an antenna because of through hole connections. Applicant respectfully disagrees with this characterization because it does not take into account the claim limitation that describes a portion of a surface of a ground

plane being directly soldered to shielding. For at least the foregoing reasons, claim 1 is patentably distinguished over the Ogino reference.

Independent claims 4, 9, 14 and 18 include a similar limitation to that argued above in reference to claim 1. Claim 3, claims 5-6 and 8, claims 10-13, claim 15, and claim 19 depend from and further limit claims 1, 4, 9, 14 and 18, respectively. Thus, for the reasons discussed above in reference to claim 1, claims 3-6, 8-15 and 18-19 should also be found to be patentably distinguished over the Ogino reference for at least the same reasons.

Claims 1, 3-6, 8-15, 18 and 19 further stand rejected under 35 U.S.C. § 103(a) as being considered to be unpatentable over U.S. Patent No. 5,691,726 to Nichols et al. ("Nichols") in view of U.S. Patent No. 4,605,471 to Mitchell ("Mitchell").

Applicant respectfully submits that Nichols does not teach or suggest the claimed features of applicant's invention including the ground plane as discussed above that is directly connected to the antenna and has a surface that is directly soldered to shielding.

As discussed in the previous responses, Nichols discloses a GPS/Radio antenna that includes a microstrip antenna element for one aspect including a dielectric substrate, a metal radiating layer, a metal ground layer covering the bottom side of the substrate and a via to connect the radiating layer to a preamplifier. (Nichols, col. 4, lines 10-21). A printed circuit board includes a ground plane on a top side that is in electrical contact with the ground layer of the antenna element. (Nichols, col. 4, lines 41-50). The top and bottom of the

printed circuit board are electrically connected at an outside edge to the base using either vias or conductive material wrapped around the edge of the board. (Nichols, col. 4, line 66 – col. 5, line 4).

In contrast, as set forth in claim 1, an intentional radiator includes a ground plane having a portion of its surface directly soldered to shielding. Nichols does not teach or suggest a direct solder connection between a portion of a surface of a ground plane of an intentional radiator and shielding that includes an opening through which an antenna radiates.

As admitted in the Office Action, Nichols does not disclose the ground plane directly soldered to shielding. It is argued in the Office Action that the vias of Nichols anticipate the claimed direct solder connection and that Mitchell provides evidence of this practice.

Applicant respectfully submit that this is not a fair characterization for reasons similar to those argued above in reference to the Ogino reference. The vias of Nichols cannot be considered to teach or suggest the claimed direct solder connection between a portion of a surface of a ground plane and shielding. The connection described in Nichols at best can be considered to be an indirect connection because the ground plane is connected to the vias, which, in turn, are connected to the shielding.

For at least this reason, applicant respectfully submits that claim 1 is patentably distinguished over Nichols, alone or in combination with Mitchell.

As argued above, independent claims 4, 9, 14 and 18 include a similar limitation as that discussed above in reference to claim 1. Claim 3, claims 5-6

and 8, claims 10-13, claim 15, and claim 19 depend from and further limit claims 1, 4, 9, 14 and 18, respectively. Thus, for the reasons discussed above in reference to claim 1, claims 3-6, 8-15 and 18-19 should also be found to be patentably distinguished over the Nichols and Mitchell references for at least the same reasons.

Applicant respectfully submits that the applicable objections and rejections have been overcome and claims 1, 3-6, 8-15 and 18-19 are in condition for allowance. If the examiner disagrees or believes that further discussion will expedite prosecution of this case, he is invited to telephone applicant's representative at the number indicated below.

If there are any charges, please charge Deposit Account No. 02-2666.

Respectfully submitted,

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VERSION OF AMENDED CLAIMS WITH MARKINGS TO SHOW CHANGES

1. (Four Times Amended) An apparatus comprising:

an intentional radiator including an antenna and a ground plane directly connected to the antenna, the ground plane to be electrically connected to shielding by a direct solder connection between a portion of a surface of the ground plane and the shielding, the shielding including an opening for the antenna, the intentional radiator to be positioned such that the antenna radiates through the opening and the ground plane at least partially physically blocks emissions through the opening.

4. (Three Times Amended) An apparatus comprising:

an intentional radiator including an antenna and a ground plane directly connected to the antenna; and

shielding including an opening, the antenna to radiate through the opening, the shielding being coupled to the ground plane by a direct solder connection between a portion of a surface of the ground plane and the shielding, the ground plane being oriented to at least partially physically block emissions through the opening.

9. (Three Times Amended) A system comprising:

a device to be shielded;

an intentional radiator including an antenna and a ground plane directly connected to the antenna;

shielding enclosing the device to be shielded except for an opening proximate to the antenna, the shielding being electrically coupled to the ground plane by a direct solder connection between a portion of a surface of the ground plane and the shielding, the ground plane being oriented to at least partially physically block emissions through the opening from the device to be shielded.

14. (Three Times Amended) A method for integrating an intentional radiator in a system, the method comprising:

electrically coupling a ground plane of an intentional radiator to system shielding that includes an opening for an antenna coupled to the intentional radiator by directly soldering of a portion of a surface of the ground plane onto the shielding;

directly connecting the ground plane to the antenna; and

orienting the ground plane such that the ground plane at least partially physically blocks emissions through the opening.

18. (Three Times Amended) An apparatus comprising:

a means for shielding including an opening for an antenna; and

a direct solder connection between a portion of a surface of a ground plane of an intentional radiator including the antenna and the shielding, the

ground plane being oriented to at least partially physically block emissions
through the opening, the ground plane being directly connected to the antenna.